



**US Army Corps  
of Engineers®**

Engineer Research and  
Development Center

# Environmental Analysis

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## Description and Background

The U.S. Army Engineer Research and Development Center, Topographic Engineering Center, Hydrologic and Environmental Analysis Branch (HEAB) conducts GIS-based Historical Photographic Analyses of current, former and closing U.S. Military installations. HEAB also analyzes aerial photography to address environmental concerns related to land use change, such as historical wetland evaluation, shoreline change, watershed/land use mapping and produces a variety of baseline environmental analyses.

The identification and remediation of hazardous sites is a problem faced by many active, closing and former U.S. military installations. These problems are complicated by the fact that many of these sites were created by practices and activities undertaken years or even decades ago. These hazardous sites are often completely obscured today due to the burial of materials, rapid revegetation, or dramatic changes in land use. HEAB uses classified and unclassified historical aerial photography and satellite imagery to locate potential sites of environmental contamination, (e.g. chemical warfare materiel (CWM), unexploded ordnance (UXO), radioactive material or landfill locations). In addition to locating potential contamination sites, the branch conducts GIS-based Historical Photogeologic Analyses for areas where groundwater contamination is a concern. Surface features that can influence the migration of contaminants, e.g. rock fractures, sinkholes, drainage and wetlands, are mapped as baseline information for site characterization and for use in support of geophysical studies.

GIS-based Historical Photographic Analyses enables one to view the landscape prior to land cover or land use change.

## Key Capabilities

The Hydrologic and Environmental Analysis Branch uses an interdisciplinary team (geologists, geographers, foresters, biologists, physical scientists, photogrammetrists, archival researchers, and others) to provide GIS-based Historical Photographic Analyses and GIS-based Photogeologic Analyses to various Department of Defense customers. These products support the Defense Environmental Restoration Program (DERP), Installation Restoration Program (IRP), Formerly Used Defense Sites (FUDS), Base Realignment and Closure (BRAC) and Formerly Utilized Sites Remedial Action Program (FUSRAP) site investigations. The use of Geographic Information Systems or GIS is a primary component of the work. GIS allows a customer to view multi-layer "time-sequenced" data in a digital environment.

A wide array of historical aerial photography, satellite imagery, maps, base plans, text, and ground photos are collected and carefully reviewed. A summary report, rectified and orthorectified image maps, detailed vector layer analysis and photographic presentations are provided for the final product in hard copy and/or on CD-ROM media.

HEAB has done projects ranging in size from a few acres to over 600 square miles. These projects save those in charge of the cleanup both time and money by refining search areas for environmental investigation, enabling more precise targeting and planning of site investigations and geophysical surveys.

## Project Resumes

Environmental projects performed by TEC's Hydrologic and Environmental Analysis Branch (1993-Present):

Aberdeen Proving Ground, MD	Camp Wellfleet, MA	Kodiak, AK (Burma Rd.)
Adak, AK	Camp Wolters, TX	Lake Bryant, FL
Amchitka Island, AK	Cleveland Plant, OH	LOOW, Niagara, NY
Anniston Army Depot, AL	Defense Depot Memphis Tennessee	Manassas Air Force Communication Ctr., VA
Badlands Bombing Range, SD	Deming AAF, NM	Nansemond Ordnance Depot, VA
Brooksville Army Air Field, FL	Dugway Proving Grounds, UT	Natick Laboratories, MA
Bucks Harbor, ME	England Air Force Base, LA	NE Cape, AK
Bushnell AAF, FL	Fifth Field Supply Depot, Guam	New River Ordnance Depot, VA
C-70 Nike, Naperville, IL	Fort Allen, Puerto Rico	Oyster Point, VA
Camp Beale, CA	Fort Belvoir, VA	Panama Canal Watershed, Panama
Camp Bonneville, WA	Fort Benning, GA (Harmony Church)	Pole Mountain, WY
Camp Bowie, TX	Fort Detrick, MD	Redstone Arsenal, AL
Camp Bullis, Texas	Fort Rucker, AL	Sandy Hook, Fort Hancock, NJ
Camp Claiborne, LA	Fort Wainwright, AK	Shallow Land Disposal Area, PA
Camp Crowder, MO	Frankford Arsenal, PA	Shumaker Naval Ammunition Depot, AR
Camp Elliott, CA	Ft. Campbell, KY	Sierra Army Depot, CA
Camp Fannin, TX	Ft. Des Moines, IA	Spencer Artillery Range, TN
Camp Howze, TX	Ft. Glenn, AK	Spring Valley, Washington, D.C.
Camp Ibis, CA	Ft. Huachuca, AZ (SPRNCA)	Virginia Ordnance Works, VA
Camp Maxey, TX	Gambell, St. Lawrence Island, AK	Wallops Island Flight Facility, VA
Camp Sibert, AL	Glenburn, ME	Water Island, US Virgin Islands
Camp Swift, TX	Harvard Target, NE	

## Point of Contact

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